

Title (en)  
Evolvable propulsion module

Title (de)  
Entwickelbares Antriebsmodul

Title (fr)  
Module de propulsion évolutif

Publication  
**EP 0947424 A2 19991006 (EN)**

Application  
**EP 99105122 A 19990325**

Priority  
US 5317898 A 19980401

Abstract (en)  
A spacecraft propulsion module (16) that includes an outer cylindrical housing (20), an end wall (22) and a specialized internal structure (50) that is capable of supporting various spacecraft components (110, 112, 124), to provide different levels of spacecraft complexity for different missions. The internal structure (50) within the housing (20) includes a plurality of inner walls (52-58) defining an "eggcrate" structure. The plurality of inner walls (52-58) includes a first pair of walls (52, 54), extending in one direction and a second pair of walls (56, 58) extending in a substantially orthogonal direction to define a center compartment (76) surrounded by a plurality of perimeter compartments (60-74). The inner walls (52-58) and the outer housing (20) define support surfaces on which can be mounted different spacecraft components, such as propellant tanks (110), pressurant tanks (168), life support tanks (126), control, guidance, navigation and communication avionics (124), batteries (112), etc. depending on the particular spacecraft design. The outer surface of the cylinder housing (20) and end wall (22) provide a significant amount of surface area for mounting engines (36) and thrusters (38) to give the module (16) free flying capability for both four and six degrees of freedom. The intersection of the inner walls (52-58) gives the spacecraft module (16) four inner mounting points (80-86) and the intersection of the inner walls (52-58) with the outer housing (20) gives the spacecraft eight outer mounting points (88-102). These mounting points (80-102) gives the spacecraft module versatility to attach different types of mounting adapters (42, 44, 46, 164) to connect other spacecraft modules to the propulsion module (16), such as crew modules, cargo modules, equipment modules, additional propulsion modules, etc. <IMAGE>

IPC 1-7  
**B64G 1/10**; **B64G 1/40**

IPC 8 full level  
**B64G 1/22** (2006.01); **B64G 1/00** (2006.01); **B64G 1/10** (2006.01); **B64G 1/40** (2006.01); **B64G 1/64** (2006.01)

CPC (source: EP US)  
**B64G 1/1078** (2013.01 - US); **B64G 1/223** (2023.08 - EP); **B64G 1/2427** (2023.08 - EP US); **B64G 1/402** (2013.01 - US); **B64G 1/4024** (2023.08 - EP); **B64G 1/646** (2013.01 - EP US); **B64G 1/223** (2023.08 - US); **B64G 1/4022** (2023.08 - EP); **B64G 1/641** (2013.01 - EP US)

Citation (applicant)  
US 4880187 A 19891114 - ROURKE KENNETH H [US], et al

Cited by  
CN102975869A; CN111891393A; FR2902762A1; US8136765B2; WO2008001002A1; WO2005118394A1

Designated contracting state (EPC)  
DE FR GB IT

DOCDB simple family (publication)  
**EP 0947424 A2 19991006**; **EP 0947424 A3 19991215**; JP H11321797 A 19991124; US 6193193 B1 20010227; US 6322023 B1 20011127

DOCDB simple family (application)  
**EP 99105122 A 19990325**; JP 9517399 A 19990401; US 5317898 A 19980401; US 63560700 A 20000810